

SHIP'S AND SCIENTIFIC EQUIPMENT DESCRIPTION AND ORIENTATION

SHIPMENTS:

Scientific equipment shipped to the BROWN should be well labeled to indicate ownership. Always identify at the destination who can be responsible for shipments upon delivery. Document and make lists of everything. The delivery POC and the Operations Officer should be informed when the shipment is to arrive so that arrangements can be made for handling, storage, or unloading. Shipping to and from the BROWN is best accomplished by national/international freight carriers contracted to pick up equipment. Prior to departure it is recommended scientists bring along necessary shipping supplies for preparing equipment for return shipment. FedEx Tags, Fed Ex USA Domestic or International Airway Bills and Airbill Pouches. Note Shipping to and from Puerto Rico is considered International.

Due to increased port security, detailed information inclusive of carrier name, unit number, license plate, driver name, driver license and date of birth will need to be passed to the BROWN. Shipment security information should indicate that the shipment does not contain any unauthorized explosives, destructive devices or hazardous materials and that consent is given to search of this shipment. Shipments should be made in a timely manner to avoid

delays common in handling scientific equipment. All shipments of scientific equipment should be addressed to:

Master NOAA R/V RONALD H. BROWN

c/o Name of the Agent

Contents:

Address of Agent

Phone contact of agent

Fax Contact of Agent

Email contact of agent

Please identify the owner and the institutional affiliation on each package. Contact the BROWN for Agent details,

Typically, you are to provide the agent with Tracking Numbers and Inventory as indicated on exterior of equipment shipped.

It is also advisable to learn of any standard custom inspection delays or customs strikes, etc which may delay the arrival of even a "express" shipped package

WHEN THE SHIP IS IN ITS HOMEPORT of Charleston, South Carolina. The address for boxes and equipment is:

NOAA SHIP RONALD H. BROWN

Name:

Contents:

USCG Vessel Support Facility

1050 Register Street
Charleston, SC 29405
Cell: 757-635-0678

Provide information to Operations Officer regarding Tracking Numbers of boxes shipped: foo.Ronald.brown@noaa.gov

CUSTOMS:

International shipments require a shipment summary for Scientific Equipment that lists all items, country of origin, and value. Paperwork associated with the shipments should be given to the vessel Commanding Officer/ Master when the equipment is delivered to the ship.

Shipments to foreign ports are the responsibility of the investigator. Air and surface shipments being sent to the vessel overseas must comply with U.S. and Foreign export/import regulations. Shipments should contain a statement on official company letterhead to the effect they are to be used on the high seas aboard the vessel and that they are not for import. For the most part, scientific equipment is held in bond at the point of entry and delivered by the agent to the vessel on its arrival. Agents should be advised of waybill numbers so they can arrange for transportation, storage and customs and expediting delivery to the vessel. The Commanding Officer/Master and Operations Officer should also be notified of any special handling requirements. The Commanding Officer/Master has the right to refuse loading of scientific equipment that is not accompanied by certified export documents.

A passport is recommended for all personnel embarking aboard the BROWN. When returning to the US from a foreign port or upon arrival in a foreign port, no member of the scientific party or crew may leave the ship prior to the completion of customs and immigration.

FINANCIAL RESPONSIBILITY

Every cruise generates costs associated with preparations, logistical support, underway at sea operations, communications and demobilization. The Chief Scientist/Program has financial responsibility for these costs and is advised to assure that provisions are made to properly assign charges to the projects participating on a cruise. The owner of the equipment retains financial and legal responsibility for the proper re-entry of equipment into the United States. Register your items with U.S. Customs first. Please bear in mind that any significant expenses relating to handling of arriving shipments and transport to the ship by the agent is your responsibility. Agents charge for every service they provide. Please try to consolidate dealings with the agent. The ship prefers you arrange direct payment to the agent for the portion of services you make use of, as opposed to after-the-fact reimbursement to the ship's accounts. Examples of items and activities generating additional cruise costs:

-Expenses of required foreign observers

- Air fares for unexpected travel
- Taxi Fares, Rental cars
- Debarkation fees in foreign ports
- Shipping and handling charges for science equipment
- Commercial crane or forklift service
- Stevedores
- Purchases of supplies (gases, chemicals, etc.)
- Satellite communication charges
- Medical expenses
- Services for repair of scientific equipment

LOADING:

LOADING & UNLOADING

Chief Scientists, Principal Investigators are to contact the Operations Officer to facilitate loading, van and lab setup and unloading for their cruise(s). Chief Scientists are responsible for assigning lab and deck spaces. Where multi-leg cruises are involved, this must also be coordinated with subsequent Chief Scientists. Laboratories are set-up for current programs and storage space is assigned to current and ongoing studies. Later programs may be loaded, provided they do not inhibit the performance of earlier scheduled programs. Unloading shall generally be considered to occur at the end of the cruise. Arrangements to allow the gear to remain onboard until a subsequent inport, may be considered on a case-by-case basis provided the equipment does not impact the performance of later projects. The ship has limited storage and is not to be confused with Grandma's attic. Thorough planning and packing to assure all equipment and HAZMAT are ultimately removed from the ship. This must also be coordinated with subsequent Chief Scientists and vessel Commanding Officer/Master.

DECK LOADING

Ship stability is ultimately the responsibility of the Captain. The responsibility of scientists is to consult early to describe the loading plans and requirements so that any necessary adjustments can be made. The more complex and heavy your equipment the more advance notice is needed to resolve loading issues and incompatibilities well before sailing day, so that it will not be necessary to leave scientific gear on the dock in order to assure a safe ship.

DECK TIE DOWNS

No welding is permitted directly to any deck. All installations must use the 2ft x 2ft grid of tie downs (welding may be done to sacrificial "ears", plates or frames, which in turn are bolted to the deck). External deck surfaces are all fitted with recessed stainless bolt receptors. Bolt holes are 1" NC thread on weather decks, 1/2"NC thread in labs and storerooms. Boltholes in equipment mounting plates should be made oversize, to allow for deck grid irregularities. If oversized, proper washers are to be used such that the mount is not compromised by the oversized hole. Designs must take into account proper thread depth, proper washers

LABORATORIES (add this section)

Virtually all scientific spaces are on the main deck.

Electronics/Computer Lab: 610sq ft. This is the location of most of the deck electronics, display hardware and science information system. SEABEAM, ADCP, ODEC BATHY 2000 3.5/12kHz bathymetric sub-bottom survey system, etc. The primary worksite for shipboard computer group and network is here.

(Analytical/Biochemical) Bio Lab: 330 sq ft. Area is on the forward port end of the Main Deck level. Lab has its own air conditioning and ventilation system. Lab has a fume hood and seawater access.

Main Lab: 1,745sq ft. Main lab is a largely flexible general lab space, with fume hood, two large sinks and uncontaminated seawater connection. The starboard side lab has access to the Main Deck, and is across from the Bio and Computer Lab.

Hydro Lab: 693 sq ft has access to two vans aft via vestibule. If van entry/exit are designed to mate to vestibule then van access can be fully enclosed. The PCO₂ system, DMS system and radiosonde station take up much of the bench real estate in the Hydro lab. Note the ship does not routinely launch radiosondes or XBT's. Sampling equipment of that nature is provided by investigating scientists.

Wet Lab: 230 sq ft - Lab has direct access to the staging bay aft. This lab is the site for wet work, wet sample preservation. Lab has a fume hood, sink and uncontaminated seawater source. A Sippican 12 digital XBT system is permanently installed. It is available for general use, but stocks of XBT probes must be user-supplied. XBT or CTD is commonly used by SEA BEAM operations to obtain sound speed information for data reduction and calibration.

Staging Bay: 330 sq ft. A sheltered workspace. Clearance from overhead to deck is 18 ft. Roll down doors starboard and aft offer limited protection against weather. Pad-eye lifting points in the overhead exist. Overhead hoists are installed: 5,000 lb capacity.

Science Storerooms

Forward Science Storerooms has three tiered shelving installed for storage of boxes, crates and equipment: 358 sq ft. Equipment can be lowered in the room through an overhead deck hatch. Science Office: 65 sq ft.

Aft Storeroom is forward of winch room on 1st platform deck, some of this space is used for ship's engineering and survey spare storage as well as the Ship's Exercise Room. A pallet sized hatch to the storeroom opens to the main deck just outboard of the starboard rollup door of the staging bay.

Climate Control:

All internal spaces are temperature controlled by a centralized air conditioning and heating system. The system is extensive and complex, with zone-by-zone and room-by-

room control. If the ventilation or air conditioning in your room or working space seems to not be operating or not controlled by the pertinent thermostat, please inform your Chief Scientist. Do not resort to system defeating measures like blocking vents. Be aware of ship's air conditioning boundaries and leave these doors shut at all times.

Science Reefer/Freezer: 63 sq ft

BROWN has scientific climate control chamber and freezer on the main deck that would be suitable for storing geological cores and biological samples. Both chambers are 7 ft wide x 9 ft long x 6.5 ft high. Freezer is capable of 0 degrees Fahrenheit, -1, -2 Fahrenheit is its usual range. Temperature may be controlled from 4 to 40 Celsius and uniformity within chamber of 0.5 Celsius. A refrigerated container is not available, but a standard 20 foot container could be accommodated in a number of spots. Provided the power requirements aren't too great, a refrigerated container could be accommodated. See Van section for additional information. The ship's cold food storage is NOT available for scientific use.

NETWORK CONNECTIONS:

All labs are wired for intranet connection. Note that the ship runs in a Windows NT4 environment. Macintosh and older operating software Windows 98, 95 are not supported. If personnel wish to be connected then they must bring network cables (ca. 15 ft) or, even better, a hub and one short cable in order to hook up their computers to the network. It is the scientists responsibility for bringing cables to connect their equipment to our network. IP addresses will be provided for laboratory laptops.

LAB BENCH SURFACES:

The portable lab benches are Formica or something similar. All benches are standard 8 feet long by 32 inches wide by 36 inches high. Portable benches and fixed counters have the tie down railings mounted around the perimeter. Plywood may be placed on them (and all the counter tops) as needed for securing equipment for your project. All benches are portable, capable of being rearranged as needed to meet individual project space configurations.

SEAWATER CONNECTIONS: Available in Main, Bio/Analytical, Hydro and Wet Labs. Flow rate is 50 gallons per minute. The intake is located in the bow as far forward as possible and deep as possible. Seawater temperature and conductivity probes are permanently mounted at the pump suction and are tied to ship's data systems. Tapping the lab's sea water system for your instruments. Labs have an open flange for which you must bring another flange to mate to a schedule 80, grey, roughly 4.25 inch, four bolt flange

COMPRESSED AIR

120-psig air available in all labs on all counter tops. Piping size is 3/8" at the fittings. 1/2" before the quick disconnect. Adapting typically will be possible as long as they are not nonstandard diverse sizes. The upper limit cannot be used continuously. It is suitable for running pneumatic tools, but may not be dry or clean enough for laboratory use.

Users should plan to supply their own filters if the air is intended for any lab use and construct their own filter apparatus.

HORIZONTAL SPACING OF UNISTRUTS TIE DOWNS IN LABS:

In lab spaces, uni-strut mounting channels are equipped on all the bulkheads and overheads. The

"Uni-strut" channels on 2' centers are spaced 24" on center. The uni-strut network throughout the labs affords additional ways to route and secure scientific cables. It is critical that you do not disturb existing wiring and remember to label your wire upon installation and remove it at the end of your cruise. All labs and storerooms are fitted with the standard 2'x2'1/2" NC bolt-down pattern on deck, accepting bolts which are 1/2" deep.

SECURING EQUIPMENT:

Do we need to provide our own eyes and other fittings, or will a supply be available on the ship?

- We have a good supply of 3/8" and 1/2" hardware; plenty of the spring loaded nuts, and a sufficient 3/8" eye bolts, but not a lot of 3/8" or 1/2" (course thread) bolts. If you anticipate needing lots of bolts, you may want to bring some.

Make sure all your equipment is secured before the ship leaves the dock. It doesn't take very long to find out what wasn't tied down or not properly secured.

Expensive equipment can be damaged beyond your ability to repair it in a matter of seconds.

VANS / SHIPPING CONTAINERS

BROWN can carry multiple laboratory, refrigeration and storage vans. Vans brought aboard should be constructed to UNOLS specification standards of wiring and constructed to take the readily available power on research vessels. Standard are the 20 foot containers. Each van will need a transformer that converts 480 3 phase to the power type and voltage required by instruments. To connect the van an outdoor, water proof, low smoke, SO, #6, 4 conductor cable will connect your van to the ships outlet.

Grounding of the van must ground to the ground in your panel. The panel must be wired through the receptacle box so that it will ground through the common ship's ground.

Numerous van placement locations on main deck aft (with access to hydro lab), 01 level port side and forward on 02 deck (3 x 70 amp circuits and 1 x 30 amp circuit available)

Prior to a van intensive cruise, the Chief Scientist should provide, in advance, a draft van deck placement footprint with approximate weights. This graphic will be used to assess placement with regard to designed ship's stability, deck loading limit and to maximizing available deck space during loading. The plan should take into account location of exterior mounted air-conditioning, escape hatches or windows, venting and interior sinks, fresh and salt water intakes taken into account with respect to the inboard/outboard

placement of other vans and ship bulkheads. Doors to the exterior should ideally be mounted on the ends to fit to the ships designed ISO-fitting van docking areas. Having a van with only one side door limits access and arrangement options if more than one van is brought aboard. A final certified weight from the shipping company is required before the van is loaded aboard. The approximate loading limit is 0.5 ton/sq ft. Ship stability is ultimately the responsibility of the Captain. The responsibility of the scientists is to consult with ship early (weeks to months in advance) to describe loading plans and requirements so that any necessary adjustments can be made. The more complex and heavy your equipment, the more advanced notice is needed. Our goal is to resolve loading problems and incompatibilities before the equipment is shipped and certainly before sailing day, so that it will not be necessary to leave scientific gear on the dock in order to assure a safe ship.

PHASE USE FAQ:

Leaving the third phase unused does not cause any problems for us. In fact, nearly all vans that come aboard only use 2 phases.

VAN PLUG FAQ:

Having a plug already attached would make your setup very quick and easy once the van is loaded; however, it's not required. Please ensure you have standard 10 gauge (or 6 gauge) SO wire to connect from the power receptacle to your transformer (roughly 20-25', depending on how far forward the vans sit and which side of the van the transformer will be on)

VAN PLUG FAQ:

Specs for the plug type we use:

Thomas and Betts cat no. DS1404MP000, Plug 100A 3 phase 480V 60HZ, Encl 4, MAX-GARD

Item is actually made by Russellstoll

Cat. NO. is the same if you purchase from them. They are not cheap.

POWER SPECS FOR MAIN DECK:

Ship service buss source

Ship Service generators

3-715 KW 600VAC 3 Phase 60 hz

Voltage regulator accuracy+/- 0.5 % over full spectrum of loading

Voltage regulator response time 17 milli-seconds

Propulsion buss source

Propulsion Generators

3-1500 KW 600VAC 3 Phase 60 hz

Voltage regulator accuracy+/- 0.5 % over full spectrum of loading

Voltage regulator response time 17 milli-seconds

Clean power buss source

2-150KW 480VAC 3 phase 60 hz motor generator sets

Voltage regulator accuracy +/- 0.5 % over full spectrum of loading
Voltage regulator response time 17 seconds-seconds
Frequency is not controlled by MG set controls. Motor is a Delta –Wye start.

Available sources on main deck

1-600VAC 250amp 3 phase 60hz (provided from SS Buss or Propulsion buss)
1-480VAC 225amp 3 phase 60hz (provided from SS Buss or Propulsion buss)
2-480VAC 80amp 3 phase 60hz (from SS buss)
2-480VAC 30amp 3 phase 60hz (from SS buss)
2-220VAC 30amp 2 phase (from SS buss)
2-115vac 30amp 3 phase (from Clean power buss)

It is advisable that if there is great concern about power spikes that van power supplies have a isolation transformer and a UPS for sensitive electronic equipment. Please do not use Auto-transformers as power converters except when you have an isolation transformer separating it from the ships system. This ship does not have a problem with power spikes. There are numerous pieces of electronic equipment that are powered directly off of ships lighting. Those pieces of equipment have been in place for years. There have been no complaints from scientific personnel who bring gear onboard about power spikes.

SCS SYSTEM FAQ:

The ship's SCS system is very capable and versatile. It can provide you a data string in nearly any format you require, comma delimited, space delimited, etc; it can even simulate NEMA data strings. The parameters on data ports can be changed to accommodate different data baud rates, parity, etc. Common sensors, such as GPS, are available at 4800 baud. Our ET's are very skillful at adapting the signal to different pin configurations, but standards are 9 pin, 25 pin, or 10 base T (J-45) plug.

A hyper terminal should read the string fine. Others have programs that can read the data string directly form the serial I/O.

If your goal is to just capture the data into a text file for later processing, the SCS system can create ASCII text files of the required data at specified intervals and you could, for instance, receive a copy of the file on a daily basis for analysis.

SENSOR PLACEMENT FAQ

The height from the water line for each IMET meteorological sensors (air temperature, relative humidity, wind speed, wind direction, long and short wave radiation, sea surface temperature, precipitation, barometric pressure and oceanographic sensors (TSG) -The TSG is from an intake 5.0 m below the waterline. -The MET sensors on our IMET tower are 10 meters above the water line; these include: wind speed, windier, and rain gauges. The air temp/RH sensor is roughly 30-40 cm below that (so approx. 9.6 m above waterline). -The SWR sensor is located on a pole approx. 6 feet (1.8 m) above the O-2

van deck; designed to be at the same height as the IMET tower. This puts it roughly 33 feet (10 m) above the waterline also, but further aft.

ELECTRONIC INTERFERENCE:

Setting up equipment, scientists should inquire before mounting equipment. Often electronic interference may result from placement. For example: Use of a mode for bottom tracking on LADCP can possibly interfere with other bottom acquisition tracking (pinger) device, GPS antenna ground planes on flying bridge or other areas may be shadowed by other antennae or voltage drops in line runs from splitting signals.

ADCP DATA

The University of Hawaii (UH) ADCP group (<http://currents.soest.hawaii.edu>) has an informal agreement with the NOAA Ship RONALD H. BROWN regarding ADCP ping data. This agreement was intended to allow us to monitor the quality of the data, thereby providing an assurance of continued high ADCP data quality on board BROWN. If UH has time (since this is an unfunded activity), UH then processes the data, with the hope of rescuing otherwise "lost" ADCP datasets, and give NOAA some more visibility by providing the data to the public and by putting timely figures on the web (http://currents.soest.hawaii.edu/ron_brown).

For many cruises, the ADCP data have no particular bearing on the science conducted, and for those cruises, UH requests permission to make figures available on the web site and to release the data to the NODC ADCP data archive (<http://ilikai.soest.hawaii.edu/sadcp>). There may be Chief Scientists who will wish to retain their two-year proprietary right over the data, and UH doesn't wish to ignore their preference. If a Chief Scientist or Lab has collected ADCP data during their cruise and wish it to remain inaccessible for two years, please let UH know as soon as possible; in any case, within 6 weeks. Chief Scientists are typically sent a note to get their permission to release data. Some answer, some do not, for those who do not that is taken as tacit permission (having requested in the email) from them. Permission from them is only a guarantee that we will back up their data, not a promise to process it.

UH can provide to scientists upon completion of their cruise. UH can't promise any particular level of processing support on these cruises. UH will attempt to at least keep an eye on the quality of the data in order to inform BROWN if there appears to be a data problem. If time permits, UH will process the data. The data, which are released, will be processed with respect, but not as thoroughly as they would be if funded directly from project funds.

BATHY PRINTER FAQ:

The printer attached to the ODEC bathy 2000 is an ODEC TDU-850.
Paper part numbers are:

G329290-1 Inexpensive, paper base, high speed.
"Excellent for half tone reproduction or when resolution is not primary concern."

G329290-2 High quality, light, plastic base.
"good grey shade reproduction."

They can be ordered from www.oceandata.com Quantity needed varies greatly depending on print speed (5-320 msec/line - I'm assuming milliseconds), resolution (100 or 200 lines/inch), and number of grey shades (b/w to 256). Some rough calculations (the web site may have better info): 1 roll = 200 ft At 256 colors, max print speed is 40 msec/line, 100 lines per inch would be (.04s x 100/in) or 1 in every 4 sec. At that rate, you'd go through a roll about every 2.5 hours At slowest print speed .32 s/line and 200 lines per inch you're closer to an inch/minute, so a roll should last you more like 40 hours. You could adjust the settings to many combinations in between.

CONSUMABLE OFFICE SUPPLIES

BROWN maintains an onboard supply of office supplies for its own use. Projects anticipating a significant need for such supplies while on underway operations should bring an inventory of these supplies, so as to not deplete the ship's stock. It is not possible to stock everything anyone might conceivably wish to have at sea. Letter, legal, ledger and plotter paper for laser and inkjet printers, toner. CD-R's, CD-RW's, computer disks, post-it notes, binders, markers, pens, pencils, shipping supplies (boxes, tape, labels, envelopes).

The following is a list of commonly used printers and copiers aboard and their respective ink and toner cartridges:

Network printers:

Computer Room: HP2500C/CM Color Inkjet

Computer Room: HP4000 LaserJet

Main Lab: HP8000N LaserJet

Copiers:

Office: Canon PC 1080F

Main Lab: Canon D660

SATELLITE COMMUNICATIONS

INMARSAT A (Analog Fax). INMARSAT B (Digital) INMARSAT rates have dropped considerably from the days of \$10.00 per minute. Rates vary according to whether INMARSAT A, B or M, peak or non-peak periods. Latest rates and credit card calling instructions are available onboard.

Inmarsat B: (Footnote 1)

011-874-336 899 620 (Voice)

011-874-336 899 621 (Fax)

Inmarsat A: (Footnote 1)

011-874-154-2643 (Voice)

011-874-154-2644 (Fax)

Inmarsat Mini-M: (Footnote 1)

011-874-761 831 360 (Voice)

Cellular:

757-635-0678 (Ship)

Inmarsat service, in order of most to least expensive, is A, B, then Mini-M.

For Inmarsat Mini-M, use 872 or 874 and the system will find the correct satellite.

(Footnote 1): Inmarsat numbers vary depending on which satellite the ship is using and/or where the ship is operating (ocean codes):

011-871-xxx-xxxx - Atlantic Ocean East

011-872-xxx-xxxx - Pacific Ocean

011-873-xxx-xxxx - Indian Ocean

011-874-xxx-xxxx - Atlantic Ocean West

INMARSAT B: Costs are up to \$6.25 (high-speed data), 2.00 for voice, data, fax.

INMARSAT C: up to \$.20

INMARSAT A: up to \$3.50

INMARSAT M: up to \$1.50

EMAIL:

The ship does have an email link via high-speed modem with satellite providers. The E-mail system used is a store and forward facility with one or two connections typically initiated per day. Once aboard, each scientist will be provided an account. The usage of E-mail above a modest amount of use, the sum of incoming and outgoing messages up to 15KB per day is a “free” service. Usage above that amount for the period aboard must be paid by the user by check at a 10 cents per KB charge. FTP and HTTP links are not currently supported by the ship.

PORT SECURITY & PERSONNEL DATA

Protocol for entering and exiting port areas will vary. In US ports, you must have a government ID to enter. All others (visitors and Scientists outside of the government) may (depending on port) will require an escort to and from the ship. All personnel, including crew, are still checked against lists supplied to port security. A passport is recommended for all personnel embarking aboard the BROWN. Chief Scientist shall ensure that all members of the scientific party have the required valid passports, visas and immunization certificates. The Chief Scientist is to gather participant passport numbers, expiration dates and travel arrival dates and provide them to the ship at least a week before the team arrives.

FOREIGN CLEARANCES

Navigation: By providing waypoints for station operations early, transit tracklines determined to be through non-US EEZ areas can be noted earlier so that clearance maybe applied for received for operating equipment enroute to the primary operational

area/transect. Entry into non-US Exclusive Economic Zones without clearances will prevent data collection.